

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re application of:

Gou ENDOU et al

Serial No.: New Application

Filed: February 26, 2002

For: SURFACE ACOUSTIC WAVE DEVICE

Group Art Unit:

Examiner:

Atty. Docket No.: 108066-00052

PRELIMINARY AMENDMENT

Commissioner for Patents
Washington, D. C. 20231

February 26, 2002

Sir:

Prior to calculation to of the filing fees and examination of the application on the merits, please amend the above-identified application as follows:

IN THE SPECIFICATION:

After the title "Background of the Invention" insert the following paragraph:

- This application is a continuation-in-part application of International Application No. PCT/JP01/05677, filed June 29, 2001, designating the United States. --.

IN THE CLAIMS:

Please amend the claims as follows:

14. (Amended) A surface acoustic wave device according to any one of claims 1 to 8, wherein
the piezoelectric substrate is a 66° to 74° rotated Y-X LiNbO₃.

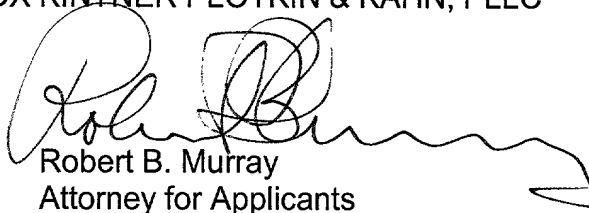
REMARKS

The above amendment to the specification has been made in order to claim continuation-in-part status from the International application, and the claims have been amended to correct the multiple dependency of the claims and to put the application in better condition for examination. As required under 37 C.F.R. 1.121, as amended, the above-amendment is a clean copy containing the amendments to the specification and claims. Attached to this response, is a marked-up copy of the affected part of the specification showing exactly where the changes are being made.

In the event that any fees are due with respect to this paper, please charge our Deposit Account No. 01-2300, referencing our docket number of 108066-00052.

Respectfully submitted,

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Enclosures: Marked-Up Copy of Page 1 of the Specification; Marked-Up copy of Claim 14

SURFACE ACOUSTIC WAVE DEVICE

BACKGROUND OF THE INVENTION

-- This application is a continuation-in-part application of International Application No. PCT/JP01/05477, filed June 29, 2001, designating the United States. --

5 1. Field of the Invention

The present invention relates to a surface acoustic wave device, and in particular to a surface acoustic wave device in which any one of an input and output has balanced or differential terminal pair.

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2. Description of the Related Arts

The surface acoustic wave device is widely used as a filter in a high frequency circuit of a radio apparatus represented by a portable telephone or the like. In recent years, in the high frequency circuit of this radio apparatus, an integrated circuit element (IC) having a balanced or differential input and output has been used.

On the contrary, a filter using a conventional surface acoustic wave device (hereinafter appropriately referred to as a surface acoustic wave filter) is unbalanced in an I/O terminal. For this reason, for example, as shown in Fig. 1, in the case of connecting with a mixer circuit IC 3, an unbalanced-balanced transforming part which is called a balun, or a transformation circuit 2 constituted by separate parts is necessary between a surface acoustic wave filter 1 and the mixer circuit IC 3.

Furthermore, the surface acoustic wave filter normally has an I/O impedance of 50Ω, and on the other hand, in many

pair is an input or output.

11. The surface acoustic wave device according to claim 9, wherein

5 the two or more filters are cascade-connected to each other in a plurality of connection parts of the interdigital transducer configuring each filter, and a phase of the filter is reversed in each neighboring connection part of the plurality of connection parts.

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12. The surface acoustic wave device according to claim 10, wherein

15 the two or more filters are cascade-connected to each other in a plurality of connection parts of the interdigital transducer configuring each filter, and a phase of the filter is reversed in each neighboring connection part of the plurality of connection parts.

13. A surface acoustic wave device according to claim 1, wherein

the piezoelectric substrate is a 40° to 44° rotated Y-X LiTaO₃.

14. A surface acoustic wave device according to ^{any one of} claims 1 to 8, wherein

the piezoelectric substrate is a 66° to 74° rotated Y-X LiNbO₃.